MULTIPLEXED DUAL-PURPOSE MAGNETORESISTIVE SENSOR AND METHOD OF MEASURING CURRENT AND TEMPERATURE

ABSTRACT

The present invention determines temperature and current from resistance measurements of a single magnetoresistive sensor. A dual-purpose sensor includes the magnetoresistive sensor having a single pair of terminals. The sensor is multiplexed under separate current conditions to produce both a temperature measurement and a current measurement in a vicinity of the sensor. A sensor system includes the dual-purpose sensor, a resistance sensing subsystem and a controller that controls the current conditions. A method of measuring temperature and current includes measuring a first resistance of the dual-purpose sensor while a first current is flowing in a conductor adjacent to the sensor, and measuring a second resistance of the sensor while a second current is flowing in the conductor. The first current has a known value while the second current has an unknown value. The temperature and current are determined respectively from the first and second resistance measurements.